

DERWENT-ACC-NO: 2004-152940

DERWENT-WEEK: 200415

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TITLE: Measuring integrity of filter membrane, comprises creating volume of gas on filtrate side, increasing pressure on feed side to create pressure drop and measuring increase in pressure on filtrate side

INVENTOR: BLUME, I; VAN HOOFF, S C J M

PATENT-ASSIGNEE: NORIT MEMBRAAN TECHNOLOGIE BV[NORIN]

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PATENT-FAMILY:

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APPLICATION-DATA:

PUB-NO APPL-DESCRIPTOR APPL-NO APPL-DATE

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INT-CL (IPC): B01D065/10, G01M003/26 , G01N015/08

ABSTRACTED-PUB-NO: NL 1020491C

BASIC-ABSTRACT:

NOVELTY - A volume of gas is created on the filtrate side (P) between the membrane (2) and outlet valve (V2), the pressure on the feed side (F) is increased to a value greater than that on the filtrate side in order to create a pressure drop and the increase in pressure on the filtrate side is measured and compared with a reference value.

DETAILED DESCRIPTION - A method for determining the integrity of a membrane in a membrane filtration unit (1) comprises removing fluid from the feed side of the membrane via a liquid outlet (3) and supplying gas to the filtrate side via an inlet (6). A first valve (V1) is present in the feed pipe, a second valve is provided in the liquid outlet

pipe (4) on the filtrate side and a third valve (V3) is provided in the gas inlet. A volume of gas is created on the filtrate side between the membrane and second valve, then the pressure on the feed side is increased to a value greater than the pressure on the filtrate side in order to create a pressure drop across the membrane, and then after closing the first valve, a pressure transmitter (PT) on the filtrate side is used to measure the increase in pressure on this side and this increase is compared with a reference value. This comparison is then used to determine the membrane integrity.

An INDEPENDENT CLAIM is also included for a second method for determining the integrity of a membrane in a unit in which a feed pipe containing the first valve and an outlet are on the filtrate side and the liquid outlet pipe containing the second valve and the gas inlet containing the third valve are on the feed side, the volume of gas is created on the feed side between the membrane and second valve, pressure is increased on the filtrate side and the pressure transmitter is on the feed side.

USE - Used for measuring the integrity of a filter membrane in a membrane filtration device.

ADVANTAGE - The test is more sensitive and accurate.

DESCRIPTION OF DRAWING(S) - The figure shows a flow diagram for the membrane integrity test.

Membrane filtration unit 1

Membrane 2

Liquid outlet 3

Liquid conduit 4

Liquid outlet 5

Gas inlet 6

Feed side F

Filtrate side P

Pressure transmitter PT

Valves V1-V3

CHOSEN-DRAWING: Dwg.2/3

TITLE-TERMS: MEASURE INTEGRITY FILTER MEMBRANE COMPRISE  
VOLUME GAS FILTER SIDE INCREASE PRESSURE FEED SIDE PRESSURE  
DROP MEASURE INCREASE PRESSURE FILTER SIDE

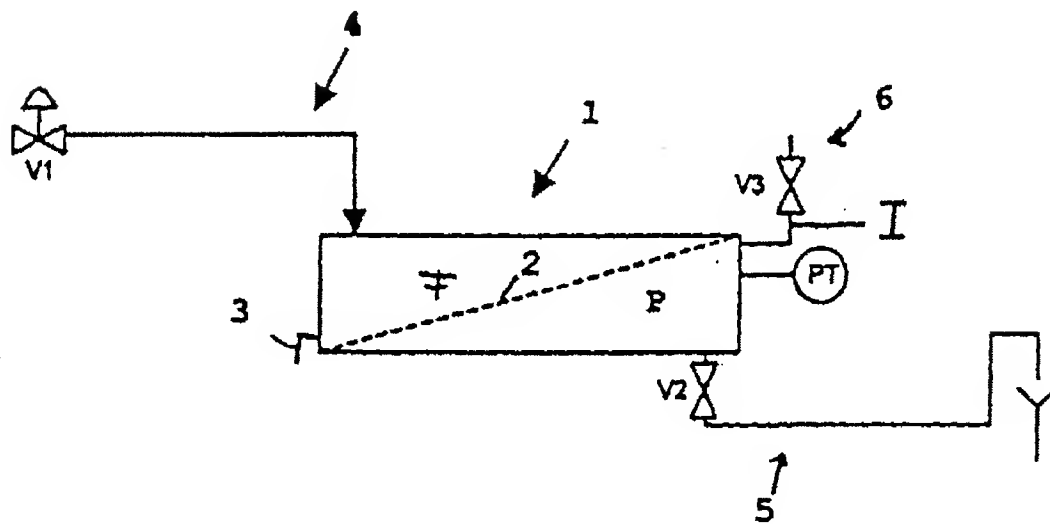
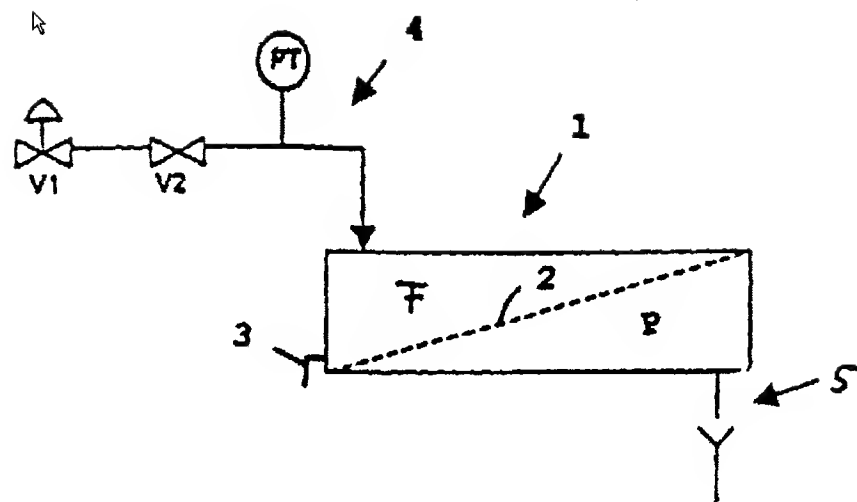
DERWENT-CLASS: J01 S02

CPI-CODES: J01-C04;  
EPI-CODES: S02-J06B;

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C2004-060877

Non-CPI Secondary Accession Numbers: N2004-122130



<p>4-152940/15 J01 RIT MEMBRAAN TECHNOLOGIE BV 2002.04.26 2002-1020491(+2002NL-1020491) (2003.10.28) B01D 65/10, G01M 3/26, G01N 15/08 asuring integrity of filter membrane, comprises creating ume of gas on filtrate side, increasing pressure on feed side to ate pressure drop and measuring increase in pressure on ate side 2004-060877 Inl. Data: VAN HOOFS C J M, BLUME I</p>	<p>J(1-C4)</p>
<p><u>VELTY</u> A volume of gas is created on the filtrate side (P) between the nbrane (2) and outlet valve (V2), the pressure on the feed side (F) increased to a value greater than that on the filtrate side in order to ate a pressure drop and the increase in pressure on the filtrate side measured and compared with a reference value.</p> <p><u>TAILED DESCRIPTION</u> A method for determining the integrity of a membrane in a nbrane filtration unit (1) comprises removing fluid from the feed e of the membrane via a liquid outlet (3) and supplying gas to the ate side via an inlet (6). A first valve (V1) is present in the feed</p>	<p>pipe, a second valve is provided in the liquid outlet pipe (4) on the filtrate side and a third valve (V3) is provided in the gas inlet. A volume of gas is created on the filtrate side between the membrane and second valve, then the pressure on the feed side is increased to a value greater than the pressure on the filtrate side in order to create a pressure drop across the membrane, and then after closing the first valve, a pressure transmitter (PT) on the filtrate side is used to measure the increase in pressure on this side and this increase is compared with a reference value. This comparison is then used to determine the membrane integrity. An INDEPENDENT CLAIM is also included for a second method for determining the integrity of a membrane in a unit in which a feed pipe containing the first valve and an outlet are on the filtrate side and the liquid outlet pipe containing the second valve and the gas inlet containing the third valve are on the feed side, the volume of gas is created on the feed side between the membrane and second valve, pressure is increased on the filtrate side and the pressure transmitter is on the feed side.</p> <p>NL 1020491-C+</p>

IE Used for measuring the integrity of a filter membrane in a membrane filtration device.

ADVANTAGE

The test is more sensitive and accurate.

DESCRIPTION OF DRAWING

The figure shows a flow diagram for the membrane integrity test.

membrane filtration unit 1

membrane 2

liquid outlet 3

liquid conduit 4

liquid outlet 5

inlet 6

feed side F

retentate side P

pressure transmitter PT

valves V1-V3

CHNOLGY FOCUS

Chemical Engineering - Preferred Process: For the first method, a pre-

determined amount of liquid is removed via the outlet on the filtrate side and replaced by a pre-determined amount of gas. The volume of gas forms an integral part of the filtrate side. The gas volume is obtained from a pressurized vessel in fluid communication with the filtrate side. For the second method, a pre-determined amount of liquid is removed via the outlet on the feed side and replaced by a pre-determined amount of gas. The volume of gas forms an integral part of the feed side. The gas volume is obtained from a pressurized vessel in fluid communication with the feed side. For both methods the pressure drop is at least  $1 \times 10^3$  Pa and the pressure on the feed side is less than 80 % of the bubble point pressure of the membrane or unit. A number of units arranged in parallel can be tested in succession or at least two units can be tested simultaneously.

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